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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,573	03/30/2001	Scott Borland	016770-002810US	7223

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EXAMINER

KIM, CHRISTOPHER S

ART UNIT PAPER NUMBER

3752

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/822,573	Applicant(s) BORLAND ET AL.	
	Examiner Christopher S. Kim	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-14,31-34,37 and 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-14,31-34,37 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on January 18, 2005 and February 25, 2005 have been entered.

The submission filed February 25, 2005 is a duplicate of the submission filed on January 18, 2005.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 10-14, 31-34, 37 and 38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

application was filed, had possession of the claimed invention. Claims 10 and 31 recite a "vibratable aperture plate comprising: a vibratable member that is configured to vibrate upon application of a electrical signal..." The disclosure, as originally filed, fails to teach a vibrable member being a part/element of the vibratable aperture plate.

Rather, applicant's specification, on page 14, lines 22-31, discloses the aperture plate 10 and the piezoelectric transducer 82 as separate elements. It appears that applicant is now attempting to claim a combination of a vibratable aperture plate and a vibratable member in the body of the claim. Such combination is inconsistent with the preamble which clearly defines the subcombination of the aperture plate as the claimed invention.

Claim Rejections - 35 USC § 103

5. Claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobo (3,771,982).

With respect to claims 31 and 34, Dobo discloses a vibratable aperture plate comprising: a plate body 14 having a top surface, a bottom surface and an apertures 15; an axis of symmetry (line labeled 20); a lower portion 27; an upper portion 25; a vibratable member 18. The functional recitation "configured to vibrate upon application of an electrical signal" merely recites the ability to so perform. Dobo discloses the limitations of the claimed invention with the exception of the plurality of apertures. Dobo discloses a single aperture. Providing a plurality of apertures is a mere duplication of parts. It would have been obvious to one having ordinary skill in the art tat the time the invention was made to have provided a plurality of apertures, since it has been held that

mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Claim 31 recites "...such that when a liquid is supplied to the top surface and the aperture plate is vibrated, liquid passes through the upper portion and is ejected through the lower portion as liquid droplets" while claim 34 further defines "wherein the bottom surface is adapted to receive a liquid, and wherein the plate body is vibratable to eject liquid droplets from the top surface." The recitations "such that when..." and "adapted to" and the contradiction in the functional language is further evidence that the functional language merely requires the ability to so perform and do not recite any positive limitations

Dobo discloses the limitations of the claimed invention with the exception of the size of the tapered portion at the intersection with the flared portion being in the range from about 1 micron to about 10 microns (note that no dimension is specified, such as diameter, radius, etc.). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have sized the tapered portion at the intersection with the flared portion in the range from about 1 micron to about 10 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claims 32 and 33, Dobo discloses the limitations of the claimed invention with the exception of the dimensional ranges of the angle of taper (upper portion), diameter and height (lower portion). It would have been obvious to one having

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ordinary skill in the art at the time the invention was made to ranges as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

6. Claims 10-14, 37 and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over Fleischman (5,918,637).

With respect to claims 10, 12 and 37, Fleischman discloses a vibratable aperture plate comprising: a plate body having a top surface 3, a bottom surface 1 and a plurality of apertures 2; an axis of symmetry 4; a vibratable member (device in which the plate is mounted to during use). The functional recitation "configured to vibrate upon application of an electrical signal" merely recites the ability to so perform.

Fleishcman discloses the limitations of the claimed invention with the exception of the size of the tapered portion at the intersection with the flared portion being in the range from about 1 micron to about 10 microns (note that no dimension is specified, such as diameter, radius, etc.). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have sized the tapered portion at the intersection with the flared portion in the range from about 1 micron to about 10 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

The recitation "wherein the plate body is electroformed to produce the apertures" has been considered to render the claim a product by process claim. "[E]ven though

product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

With respect to claim 11, Fleishcman discloses the limitations of the claimed invention with the exception of the material of the plate body. Palladium, palladium nickel and palladium alloys are well known materials. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have made the plate body of Fleischman of palladium, palladium nickel or palladium alloys for strength and flexibility.

With respect to claims 13, 14 and 38, Fleishcman discloses the limitations of the claimed invention with the exception of the dimensional ranges of the exit angle and the thickness. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the ranges as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

7. Claims 10-14, 31-34, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeMaine et al. (3,958,249).

With respect to claims 10, 12 and 37, DeMaine discloses a vibratable aperture plate comprising: a plate body having a top surface, a bottom surface 40 and a plurality of apertures 41; an axis of symmetry; a vibratable member 15.

DeMaine discloses the limitations of the claimed invention with the exception of the size of the tapered portion at the intersection with the flared portion being in the range from about 1 micron to about 10 microns (note that no dimension is specified, such as diameter, radius, etc.). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have sized the tapered portion at the intersection with the flared portion in the range from about 1 micron to about 10 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

The recitation "wherein the plate body is electroformed to produce the apertures" has been considered to render the claim a product by process claim. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

With respect to claim 11, DeMaine discloses the limitations of the claimed invention with the exception of the material of the plate body. Palladium, palladium

nickel and palladium alloys are well known materials. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have made the plate body of DeMaine of palladium, palladium nickel or palladium alloys for strength and flexibility.

With respect to claims 13, 14 and 38, DeMaine discloses the limitations of the claimed invention with the exception of the dimensional ranges of the exit angle and the thickness. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the ranges as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claims 31 and 34, DeMaine discloses a vibratable aperture plate comprising: a plate body having a top surface, a bottom surface 40 and a plurality of apertures 41; an axis of symmetry; a vibratable member 15. DeMaine discloses a concave lower portion in figure 2b and a tapered upper portion in figure 3a. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided a concave lower portion and a tapered upper portion to permit greater dimensional change of the orifice during modulation (column 4, lines 19-26).

DeMaine discloses the limitations of the claimed invention with the exception of the size of the tapered portion at the intersection with the flared portion being in the range from about 1 micron to about 10 microns (note that no dimension is specified, such as diameter, radius, etc.). It would have been obvious to one having ordinary skill

in the art at the time the invention was made to have sized the tapered portion at the intersection with the flared portion in the range from about 1 micron to about 10 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim 31 recites "...such that when a liquid is supplied to the top surface and the aperture plate is vibrated, liquid passes through the upper portion and is ejected through the lower portion as liquid droplets" while claim 34 further defines "wherein the bottom surface is adapted to receive a liquid, and wherein the plate body is vibratable to eject liquid droplets from the top surface." The recitations "such that when..." and "adapted to" and the contradiction in the functional language is further evidence that the functional language merely requires the ability to so perform and do not recite any positive limitations

With respect to claims 32 and 33, DeMaine discloses the limitations of the claimed invention with the exception of the dimensional ranges of the angle of taper (upper portion), diameter and height (lower portion). It would have been obvious to one having ordinary skill in the art at the time the invention was made to ranges as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Arguments

8. Applicant's arguments filed February 25, 2005 have been fully considered but they are not persuasive.

In response to applicant's argument that the prior art does not disclose a vibratable member that is configured to vibrate upon application of an electrical signal, the recitation merely recites the ability to so perform. The vibratable member 18 of Dobo and the vibratable member (device in which the plate is mounted to during use) of Fleischman is configured to vibrate upon application and energizing of a piezoelectric transducer. The claim does not limit the vibratable member itself to be piezoelectric transducer. If applicant desires the functional recitation to be given patentable weight, it is recommended that applicant invoke means plus function under 35 U.S.C. 112, sixth paragraph.

Even if the functional recitation is interpreted to limit the vibratable member to such element as a piezoelectric transducer, applicant's argument is moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. Kim whose telephone number is (571) 272-4905. The examiner can normally be reached on Monday - Thursday, 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (571) 272-4919. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Christopher S. Kim
Primary Examiner
Art Unit 3752

CK